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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
ULM, JOHN D	

ART UNIT	PAPER NUMBER
1649	

MAIL DATE	DELIVERY MODE
05/06/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/579,399	HUNG ET AL.	
	Examiner	Art Unit	
	John D. Ulm	1649	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-28* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-28* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *11 May 2006* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *3/12/07*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1) Claims 1 to 28 are pending in the instant application.

Information Disclosure Statement

2) The information disclosure statement (IDS) submitted on 12 March of 2007 is in compliance with the provisions of 37 CFR 1.97 and has been considered by the examiner.

Drawings

3) The figure in the instant application does not comply with 37 C.F.R. § 1.84(U)(1), which states that " [where only a single view is used in an application to illustrate the claimed invention, it must not be numbered and the abbreviation "FIG" must not appear". A corrected drawing is required in reply to the Office action to avoid abandonment of the application. The requirement for corrected drawings will not be held in abeyance.

Applicant is reminded that once the drawing is changed to meet the numbering requirement of 37 C.F.R. § 1.84(U)(1), Applicant is required to file an amendment under to change the Brief Description of the Drawings and the rest of the specification accordingly.

Specification

4) The instant specification does not comply with 37 C.F.R. § 1.821(d) which requires a reference to a particular sequence identifier (SEQ ID NO:) be made in the specification and claims wherever a reference is made to that sequence. Specifically, the text on pages 11 and 14 of the instant specification describe particular amino acid

sequences without employing the required sequence identifiers. Applicant is advised that the amendment to the specification submitted 12 March of 2007 will not be entered because it clearly does not comply with 37 C.F.R. § 1.121(b), which requires that "Amendments to the specification, other than the claims, computer listings (§ 1.96) and sequence listings (§ 1.825), must be made by adding, deleting or replacing a paragraph, by replacing a section, or by a substitute specification, in the manner specified in this section". Correction is required. See M.P.E.P. 2422.03.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5) Claims 1 to 28 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention commensurate in scope with these claims.

The text on page 2 of the instant specification states that "olfactory GPCRs are quite exceptional in that they cannot be easily expressed in heterologous cultured cell systems in a manner that provides for their, function in the cell". In describing the difficulty of obtaining the functional expression of odorant receptors in recombinant host cells, the text on page 213 of the Firestein publication (NATURE 413:211-218, 13 Sep. 2001, cited by Applicant) discloses that "[f]or unknown reasons, the OR protein,

although produced in transfected cells, seems to be trapped in endoplasmic reticulum, Golgi and endosomal compartments, with little or no receptor finding its way to the membrane". It is clear from the specification and the art of record that the practice of obtaining the functional expression of odorant receptors in heterologous host cells was unpredictable at the time of the instant invention.

The only material limitation recited in the instant claims that distinguishes them from the prior art is the limitation "introducing an expression cassette comprising a promoter operably linked to a nucleic acid encoding said olfactory GPCR into a macroglial cell in vitro". The text on page 15 of the instant specification defines "macroglial cell" as "any cell of a variety of neuron-associated cell types, including: Schwann cells, oligodendrocytes and astrocytes, and derivatives thereof", including "cancerous macroglial ceils, e.g., Schwanoma, neurofibromas, astrocytoma cells, and oligodendroeytoma cells; immortal macroglial cells, e.g., cells, immortalized via introduction of a suitable oncogenes, e.g., I-IPV E6-E7, T antigen, and the like; hybrid cells produced by cell fusion in which a macroglial cell is fused with a different (non-macroglial) or a like (macroglial) type of cell; and recombinant macroglial cells, e.g., cells that have contain an exogenous nucleic acid, or a "knockout" in an endogenous gene, e.g., a gene required for or that inhibits the synthesis of myelin. The instant specification is not enabled for the full breadth of the claims because it contains only a single working example of the claimed invention, and that example is limited to the primary explant culture of rat Schwann cells described on page 28 therein. *In re Fisher*, 427 F.2d 833, 166 USPQ 18 (CCPA 1970), held that:

"Inventor should be allowed to dominate future patentable inventions of others where those inventions were based in some way on his teachings, since such improvements while unobvious from his teachings, are still within his contribution, since improvement was made possible by his work; however, he must not be permitted to achieve this dominance by claims which are insufficiently supported and, hence, not in compliance with first paragraph of 35 U.S.C. 112; that paragraph requires that scope of claims must bear a reasonable correlation to scope of enablement provided by specification to persons of ordinary skill in the art; in cases involving predictable factors, such as mechanical or electrical elements, a single embodiment provides broad enablement in the sense that, once imagined, other embodiments can be made without difficulty and their performance characteristics predicted by resort to known scientific law; in cases involving unpredictable factors, such as most chemical reactions and physiological activity, scope of enablement varies inversely with degree of unpredictability of factors involved."

Further, *In re Clarke*, 148 USPQ 665, (CCPA 1966) held that;

" It appears to be well settled that a single species can rarely, if ever, afford support for a generic claim. In re Soll, 25 C.C.P.A. (Patents) 1309, 97 F.2d 623, 38 USPQ 189; In re Wahlforss et al., 28 C.C.P.A. (Patents) 867, 117 F.21 270, 48 USPQ 397. The decisions do not however fix any definite number of species which will establish completion of a generic invention and it seems evident therefrom that such number will vary, depending on the circumstances of particular cases. Thus, in the case of a small genus such as halogens, consisting of four species, a reduction to practice of three, or perhaps even two, might serve to complete the generic invention, while in the case of a genus comprising hundreds of species, a considerably large number of reductions to practice would probably be necessary."

Because the instant specification fails to disclose any sound scientific reasoning to explain why odorant receptors are expected to be functionally expressed in all macroglial cells to the exclusion of other cells systems, an artisan can not reasonably predict, "by resort to known scientific law", whether any macroglial cell other than a Schwann cell primary explant will be capable of functionally expressing an odorant receptor.

In addition, the text on page 213 of the Firestein publication discloses that odorant receptors "have been expressed in heterologous cell systems by including additional amino acids on the amino terminal" and that "[f]using 20 amino acids from rhodopsin or a short piece of serotonin receptor to the N terminal of several ORs has enabled low levels of membrane expression in HEK 293 cells". The text on pages 11 and 14 of the instant specification describe the first 20 amino acids from rhodopsin as a signal sequence and teaches that it can, optionally, be included in an odorant receptor of the instant invention. However, the only working example of the claimed invention, which is described on page 28 of the instant specification, is silent on this subject. It merely states that "[t]he Schwann cells were transfected with 0.5ug of olfactory GPCR expression plasmid with Fugene6 reagent (Roche) and Optimem serum-free medium (Invitrogen)". It is absolutely silent on the material details of the "olfactory GPCR expression plasmid", rendering the reader incapable of determining if the rhodopsin signal sequence is critical to the practice of the instant invention and raising doubt as to whether Applicant has made a *bona fide* effort to disclose the best mode of the invention known to them. Given the failings of the prior art, an artisan needs to know if an odorant receptor has been functionally expressed in a Schwann cell without the use of the rhodopsin signal sequence before they can predictable practice the instant invention commensurate in scope with the claims.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6) Claims 16 to 20 are rejected under 35 U.S.C. 102(b) as being anticipated by the Kiefer et al. publication (Biochemistry 35:16077-16084, 1996, cited by Applicant). These claims encompass a binding assay that employs a purified odorant receptor. Because the limitation "producing said olfactory GPCR in a macroglial cell according to the method of claim 1" is a product by process limitation, these claims encompass a binding assay the employs a purified odorant receptor protein irrespective of the process by which that receptor protein was made. These claims encompass the assay that was described in Figure 6 and Table 1 of Kiefer et al. The concluding paragraph of Kiefer et al. taught the application of the methods described therein to the characterization of "the specific interrelationship between the array of olfactory receptor types and the numerous odor ligands".

7) Claims 16 to 20 are rejected under 35 U.S.C. 102(e) as being anticipated by the Martinez et al. publication (WO 03/000735, cited by Applicant). These claims encompass a binding assay that employs a purified odorant receptor. Because the limitation "producing said olfactory GPCR in a macroglial cell according to the method of claim 1" is a product by process limitation, these claims encompass a binding assay the employs a purified odorant receptor protein irrespective of the process by which that

receptor protein was made. The text on page 22 of Martinez et al. described purified odorant receptors and the text on pages 42 to 43 taught binding assays employing those receptors. .

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John D. Ulm whose telephone number is (571) 272-0880. The examiner can normally be reached on 9:00AM to 5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jeffrey Stucker can be reached on (571) 272-0911. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/John D. Ulm/
Primary Examiner, Art Unit 1649